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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/788,675	02/21/2001	Hideki Hino	325772022500	6035

25227 7590 01/25/2007  
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MCLEAN, VA 22102

EXAMINER
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MILIA, MARK R

ART UNIT	PAPER NUMBER
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2625

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

09/788,675

Applicant(s)

HINO ET AL.

Examiner

Mark R. Milia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 November 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3-7 and 9-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-7, and 9-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/28/06 has been entered. Currently, claims 1, 3-7, and 9-14 are pending.

### ***Response to Arguments***

2. Applicant's arguments, see pages 7-8, filed 11/28/06, with respect to the rejection(s) of claim(s) 1 and 7 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a new interpretation of a previously applied reference. The examiner agrees that the reference of Namikawa (US 6094698) does not disclose explicitly whether or not a transfer of a control program is proceeding or not. However, the reference of Oizumi discloses such a feature and the combination of Namikawa and Oizumi would have been obvious to one of ordinary skill in the art at the time the invention was made.

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 3-7, and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namikawa (US 6094698) in view of Tanimoto (JP 10-213997) and Oizumi (US 5588012).

Regarding claim 1, Namikawa discloses an image processing apparatus, comprising: a first storage medium for storing a control program (see column 3 line 66-column 4 line 3), a control device for controlling image processing of the image processing apparatus by the control program stored in the first storage medium (see column 4 lines 7 and 11-15), a transfer device for transferring the control program from an external device to the first storage medium (see column 4 lines 49-51 and column 5 lines 37-60), a nonvolatile second storage medium for storing a transfer state of the control program (see column 6 lines 1-10), an optional device (see column 3 lines 44-56, column 11 lines 13-28 and 50-51), a power supply (see column 4 lines 46-48 and Fig. 1), and a writing device for writing data that indicates when transfer of the control program may proceed and indicates when transfer of the control program has completed (see column 7 line 45-column 9 line 54).

Namikawa does not disclose expressly the transfer state indicating whether or not the control program is being transferred, a power supply control device for

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controlling power supply to the optional device in response to the transfer state stored in the second storage medium, and a write device for writing data that indicates transfer is proceeding onto the second storage medium when transfer of the control program is started, and writing data that indicates transfer is not proceeding onto the second storage medium when transfer of the control program is normally completed.

Tanimoto discloses a power supply control device for controlling power supply to the optional device in response to the transfer state stored in the second storage medium (see paragraphs 0006-0008, 0011 lines 6-9, 0013, 0019 lines 6-7, and 0022-0034).

Tanimoto does not disclose expressly the transfer state indicating whether or not the control program is being transferred.

Oizumi discloses the transfer state indicating whether or not the control program is being transferred and a write device for writing data that indicates transfer is proceeding onto the second storage medium when transfer of the control program is started, and writing data that indicates transfer is not proceeding onto the second storage medium when transfer of the control program is normally completed (see column 5 line 46-column 6 line 14, column 7 lines 27-36, and column 8 lines 44-53).

Namikawa, Tanimoto, and Oizumi do not disclose expressly an optional paper discharge device, however, it is well known in the art to have a printing device with an optional paper discharge device and Namikawa discloses that one of the external devices can be a printer.

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Regarding claim 7, Namikawa discloses an image forming apparatus, comprising a main body for forming images on paper sheets (see column 3 lines 44-47 and Fig. 1), an optional device (see column 3 lines 48-57), a first storage medium for storing a control program (see column 3 line 66-column 4 line 3), a control device for controlling image formation of the image forming apparatus by the control program stored in the first storage medium (see column 4 lines 7 and 11-15), a transfer device for transferring the control program from an external device to the first storage medium (see column 4 lines 49-51), a nonvolatile second storage medium for storing a transfer state of the control program (see column 6 lines 1-10), a power supply (see column 4 lines 46-48 and Fig. 1), and a writing device for writing data that indicates when transfer of the control program may proceed and indicates when transfer of the control program has completed (see column 7 line 45-column 9 line 54).

Namikawa does not disclose expressly the transfer state indicating whether or not the control program is being transferred, a power supply control device for controlling power supply to the optional device in response to the transfer state stored in the second storage medium, and a write device for writing data that indicates transfer is proceeding onto the second storage medium when transfer of the control program is started, and writing data that indicates transfer is not proceeding onto the second storage medium when transfer of the control program is normally completed.

Tanimoto discloses a power supply control device for controlling power supply to the optional device in response to the transfer state stored in the second storage

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medium (see paragraphs 0006-0008, 0011 lines 6-9, 0013, 0019 lines 6-7, and 0022-0034).

Tanimoto does not disclose expressly the transfer state indicating whether or not the control program is being transferred.

Oizumi discloses the transfer state indicating whether or not the control program is being transferred and a write device for writing data that indicates transfer is proceeding onto the second storage medium when transfer of the control program is started, and writing data that indicates transfer is not proceeding onto the second storage medium when transfer of the control program is normally completed (see column 5 line 46-column 6 line 14, column 7 lines 27-36, and column 8 lines 44-53).

Namikawa, Tanimoto, and Oizumi do not disclose expressly an optional paper discharge device, however, it is well known in the art to have a printing device with an optional paper discharge device and Namikawa discloses that one of the external devices can be a printer.

Regarding claim 13, Namikawa discloses an image processing apparatus, comprising: a first storage medium for storing a control program (see column 3 line 66-column 4 line 3), a control device for controlling image processing of the image processing apparatus by the control program stored in the first storage medium (see column 4 lines 7 and 11-15), a transfer device for transferring the control program from an external device to the first storage medium (see column 4 lines 49-51 and column 5 lines 37-60), a nonvolatile second storage medium for storing a transfer state of the control program (see column 6 lines 1-10), an optional device (see column 3 lines 44-

56, column 11 lines 13-28 and 50-51), a power supply (see column 4 lines 46-48 and Fig. 1), and a writing device for writing data that indicates when transfer of the control program may proceed and indicates when transfer of the control program has completed (see column 7 line 45-column 9 line 54).

Namikawa does not disclose expressly the transfer state indicating whether or not the control program is being transferred, a power supply control device for controlling power supply to the ADF in response to the transfer state stored in the second storage medium, and a write device for writing data that indicates transfer is proceeding onto the second storage medium when transfer of the control program is started, and writing data that indicates transfer is not proceeding onto the second storage medium when transfer of the control program is normally completed.

Tanimoto discloses a power supply control device for controlling power supply to the optional device (ADF) in response to the transfer state stored in the second storage medium (see paragraphs 0006-0008, 0011 lines 6-9, 0013, 0019 lines 6-7, and 0022-0034).

Tanimoto does not disclose expressly the transfer state indicating whether or not the control program is being transferred.

Oizumi discloses the transfer state indicating whether or not the control program is being transferred and a write device for writing data that indicates transfer is proceeding onto the second storage medium when transfer of the control program is started, and writing data that indicates transfer is not proceeding onto the second



storage medium when transfer of the control program is normally completed (see column 5 line 46-column 6 line 14, column 7 lines 27-36, and column 8 lines 44-53).

Namikawa, Tanimoto, and Oizumi do not disclose expressly an ADF, however, it is well known in the art to have a printing device with an ADF and Namikawa discloses that one of the external devices can be a printer.

Regarding claim 14, Namikawa discloses an image forming apparatus, comprising a main body for forming images on paper sheets (see column 3 lines 44-47 and Fig. 1), an optional device (see column 3 lines 48-57), a first storage medium for storing a control program (see column 3 line 66-column 4 line 3), a control device for controlling image formation of the image forming apparatus by the control program stored in the first storage medium (see column 4 lines 7 and 11-15), a transfer device for transferring the control program from an external device to the first storage medium (see column 4 lines 49-51), a nonvolatile second storage medium for storing a transfer state of the control program (see column 6 lines 1-10), a power supply (see column 4 lines 46-48 and Fig. 1), and a writing device for writing data that indicates when transfer of the control program may proceed and indicates when transfer of the control program has completed (see column 7 line 45-column 9 line 54).

Namikawa does not disclose expressly the transfer state indicating whether or not the control program is being transferred, a power supply control device for controlling power supply to the ADF in response to the transfer state stored in the second storage medium, and a write device for writing data that indicates transfer is proceeding onto the second storage medium when transfer of the control program is

started, and writing data that indicates transfer is not proceeding onto the second storage medium when transfer of the control program is normally completed.

Tanimoto discloses a power supply control device for controlling power supply to the optional device (ADF) in response to the transfer state stored in the second storage medium (see paragraphs 0006-0008, 0011 lines 6-9, 0013, 0019 lines 6-7, and 0022-0034).

Tanimoto does not disclose expressly the transfer state indicating whether or not the control program is being transferred.

Oizumi discloses the transfer state indicating whether or not the control program is being transferred and a write device for writing data that indicates transfer is proceeding onto the second storage medium when transfer of the control program is started, and writing data that indicates transfer is not proceeding onto the second storage medium when transfer of the control program is normally completed (see column 5 line 46-column 6 line 14, column 7 lines 27-36, and column 8 lines 44-53).

Namikawa, Tanimoto, and Oizumi do not disclose expressly an ADF, however, it is well known in the art to have a printing device with an ADF and Namikawa discloses that one of the external devices can be a printer.

Namikawa, Tanimoto, & Oizumi are combinable because they are from the same field of endeavor, transfer of data between devices.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the storing of a transfer state, which is well known in the art,

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as described by Oizumi and the power supply control of an optional device of Tanimoto with the image processing apparatus of Namikawa.

The suggestion/motivation for doing so would have been to prevent printer malfunction such as overheating and incorrect drive motor rotation when control programs are being transferred (see paragraphs 0035-0036 of Tanimoto).

Therefore, it would have been obvious to combine Tanimoto with Namikawa to obtain the invention as specified in claims 1, 7, 13, and 14.

Regarding claims 3 and 9, Namikawa further discloses a confirmation device for confirming the transfer state stored in the second storage medium when power is applied to the image processing apparatus (see column 6 lines 1-10, column 7 lines 36-44, and column 8 lines 9-17).

Regarding claims 4 and 10, Tanimoto further discloses wherein power supply to the optional device is stopped when it is confirmed by the confirmation device that the data indicating that transfer is processing is stored in the second storage medium (see paragraphs 0006-0008, 0013, and 0022-0034).

Regarding claims 5 and 11, Namikawa further discloses a confirmation device for confirming presence of the second storage medium when power is applied to the image processing apparatus (see column 7 line 45-column 9 line 13).

Regarding claims 6 and 12, Tanimoto further discloses wherein power supply to the optional device is stopped when it is confirmed by the confirmation device that the

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second storage medium is not present (see paragraphs 0006-0008, 0013, 0022-0025, and 0034).

### **Conclusion**

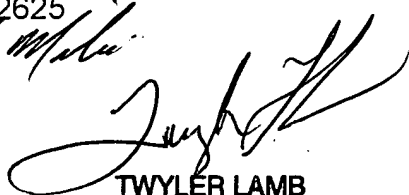
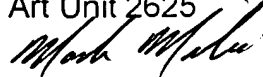
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark R. Milia whose telephone number is (571) 272-7408. The examiner can normally be reached M-F 8:00am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler M. Lamb can be reached at (571) 272-7406. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MRM

Mark R. Milia  
Examiner  
Art Unit 2625



TWYLER LAMB  
SUPERVISORY PATENT EXAMINER

\* NOTICES \*

Tanimoto

JP-10 213997

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DETAILED DESCRIPTION

### [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the reproducing unit which avoids malfunction under rewriting actuation of the program which performs modification and version up of a program depended, out of control.

[0002]

[Description of the Prior Art] Conventionally, in the reproducing unit, the contents of storage are held also at the time of power-source OFF, and modification of a program and a program change (henceforth "modification to a new program") by version up are made after installation of equipment using the flash plate storage element (ROM) which can rewrite the contents of storage of a parenthesis. In modification of this program, the connector prepared in the Maine control board in equipment is equipped with the IC card which stored a new program. And the new program stored in an IC card is downloaded by control of CPU, and is transmitted to a flash ROM (henceforth rewriting working" of "program), and rewriting which changes the conventional program into a new program is performed.

[0003] By the way, CPU may malfunction during rewriting actuation of such a program. When the worst, CPU may overrun recklessly and it may be in a condition out of control. That is, when the connector of the Maine control board is equipped with an IC card, it is operating by the program stored in this IC card, a non-contact condition arises [ the pin of an IC card, and contact of a connector ] with static electricity at the time of wearing by dust or the operator, and a condition out of control occurs. As a result, for example, a fixing heater, energization can be performed beyond the need, and it can overheat, or it is possible to energize superfluously to the motor in a photo conductor driving gear, and to carry out incorrect rotation actuation to it.

[0004]

[Problem(s) to be Solved by the Invention] In the conventional reproducing unit, there is a problem that malfunction in the condition out of control that CPU overran recklessly occurs during rewriting actuation of the program at the time of changing into the new program stored in the IC card as mentioned above.

[0005] Then, the purpose of this invention is to offer the reproducing unit which can prevent certainly malfunction of the fixing heater by the condition out of control, the motor of a driving gear, etc. under rewriting actuation of the program at the time of connecting external storage or storage elements, such as an IC card, to a connector, and changing into a new program.

[0006]

[Means for Solving the Problem] In order to attain the aforementioned purpose, invention according to claim 1 can transmit a program to the internal storage means for program storing from an external storage means, and when it connects the storage means of said exterior to a fixing heater and said fixing heater in a reproducing unit equipped with the power supply section which performs current supply, it is characterized by stopping the energization to a fixing heater from said power supply section.

[0007] Invention according to claim 2 can transmit a program to the internal storage means for program

storing from an external storage means, and when it connects the storage means of said exterior to a fixing heater and said fixing heater in a reproducing unit equipped with the power supply section which performs current supply, it is characterized by stopping the energization from the power supply section for a load drive.

[0008] Invention given in above claims 1 and 2 has stopped the energization to motors, such as a fixing heater or a drive, during rewriting actuation of the program equipped with external storage. Therefore, the safety improves, without a motor carrying out incorrect rotation actuation, without preventing the overheating and performing energization to motors, such as a drive, without performing energization to a fixing heater, also after [ out of control ] the control means has overrun recklessly with the non-contact condition and static electricity at the time of connecting external storage, as explained according to the condition out of control in a control means, for example, a Prior art.

[0009]

[Embodiment of the Invention] Next, the gestalt of operation of the reproducing unit of this invention is explained to a detail based on a drawing. Drawing 1 is the circuit diagram showing the 1st operation gestalt of this invention, and drawing 2 is a mimetic diagram for explaining the configuration and the attachment and detachment of an IC card at the time of the thing of drawing 1 being mounted in the Maine control board. Reproducing units, such as a reproducing unit and a printer, have drawing 1 and the configuration shown in 2, and only the circumference of the fixing heater for the toner image formed in the transfer paper being established is shown.

[0010] In drawing 1 and 2, the connector 2 as an attachment-and-detachment connection which formed much contacts is equipped with IC card 1 which has many pins as external storage which memorized the new program for performing modification and version up of a program with this operation gestalt. In this connector 2, the switch SW1 which serves as ON at the time of insertion of IC card 1 is formed. This switch SW1 uses a mechanical switch or a non-contact-type photodetection mold switch.

[0011] In this example, the end of a switch SW1 is connected between power-source Rhine and touch-down through Resistance R, and it has CPU3 as a control means which incorporates the descent electrical potential difference of the power-source Rhine electrical potential difference (Vcc) by the resistance R at the time of a connector 2 being equipped with IC card 1 of ON of a switch SW1 as an input signal of a low level (high level it is the electrical potential difference of power-source Rhine which led Resistance R at whose time of un-equipping with IC card 1). Although this CPU3 operates by the program memorized to the flash ROM 4 as a storage means, it operates by the new program stored in IC card 1 during rewriting actuation of the program at the time of wearing to the connector 2 of IC card 1.

[0012] moreover, CPU3 -- two outgoing ends to the output signals S1 and S2 -- outputting -- one outgoing end -- and (AND) it connects with one input edge of the gate 5. moreover, the input edge of another side of this AND gate 5 is connected to the input edge of CPU3, and the high-level signal or low-level signal by turning on and off (correspondence to the connector 2 of IC card 1) of a switch SW1 is inputted. [ equip, or demount and ] The outgoing end of the AND gate 5 is connected with the base of the transistor Q1 for switching. Moreover, the emitter of a transistor Q1 is grounded, the end of exiting coil 6a of the relay switch 6 for energizing or stopping to a fixing heater 7 is connected to a collector, and this other end is connected with power-source Rhine (Vcc).

[0013] Furthermore, this operation gestalt has the alternating current (AC) power source 8 as a power supply section for supplying the alternating current (AC) electrical potential difference to the fixing heater 7 for the toner image formed in the transfer paper being established. On-off contact 6b in a relay switch 6 is connected to the serial at the one side which connects a fixing heater 7 and AC power supply 8. The semi-conductor noncontact relay (SSR, Solid.State.ReLay) 9 is formed in the other side which furthermore connects a fixing heater 7 and AC power supply 8, and this SSR9 has switching elements, such as a triac from AC power supply 8 to a fixing heater 7 which turns supply of an alternating current on and off, with the output signal S2 of the outgoing end of another side of CPU3.

[0014] In addition, although supply of an alternating current was a thing from AC power supply 8 to a fixing heater 7 which controls the ON (energization) time amount of SSR9 by the output signal S2 as

generation of heat of a fixing heater 7 was fixed-ized by the predetermined value, it omitted that illustration about circuits, such as a sensing element which sends out the detecting signal to the febrile state of the fixing heater 7 for it to CPU3.

[0015] Actuation of the gestalt of this 1st operation is explained below. The actuation at the time of usual [ by which a connector 2 is not probably equipped with IC card 1 ] is explained. In drawing 1 and 2, by the normal operation of this 1st operation gestalt, it performs by CPU3 reading the program memorized to the flash ROM 4, and operates. The switch SW1 is off, incorporates the high-level input signal of a power-source Rhine electrical potential difference (Vcc) with which CPU3 led Resistance R, and recognizes un-equipping with IC card 1. One input edge of the AND gate 5 is also set as coincidence high-level. Moreover, the high-level output signal S1 is inputted also into the input edge of another side of the AND gate 5 from CPU3.

[0016] Consequently, a high-level signal is outputted to the base of a transistor Q1 from the AND gate 5, and a transistor Q1 serves as ON (flow). On-off contact 6b of a relay switch 6 becomes ON by this flow, and the alternating current from AC power supply 8 is supplied to a fixing heater 7 through SSR9 with on-off contact 6b. In this case, CPU3 sends out an output signal S2 to SSR9, and controls that resistance welding time so that generation of heat of a fixing heater 7 is fixed-ized by the predetermined value.

[0017] Next, rewriting actuation of the program by which a connector 2 is equipped with IC card 1 is explained. Drawing 3 is a flow chart which shows processing of rewriting actuation of the program in the 1st operation gestalt. In drawing 3, the transport agent which CPU3 has memorized to the flash ROM 4 is first read and performed during rewriting actuation of the program of this 1st operation gestalt from drawing 1, and that control action is started (S401). If a connector 2 is equipped with IC card 1, a switch SW1 will be turned on. CPU3 incorporates the input signal of a low level with which the power-source Rhine electrical potential difference (Vcc) at the time of Resistance R being grounded descended, and recognizes wearing of IC card 1 (S402).

[0018] CPU3 -- a current copy -- it judges whether it is working (S403). a copy -- when not working (S403, No), one input edge of the AND gate 5 is set as a low level, and the high-level output signal S1 is inputted into the input edge of another side of the AND gate 5 from CPU3. As a result, the signal of a low level is outputted to the base of a transistor Q1 from the AND gate 5, and a transistor Q1 serves as OFF (un-flowing). On-off contact 6b of a relay switch 6 becomes off by this un-flowing, and supply of the alternating current from AC power supply 8 is suspended to a fixing heater 7 (S404).

[0019] Next, CPU3 starts rewriting actuation (download) of the program which makes a change to the new program stored in IC card 1, and control action by the new program is performed in this case (S405). Furthermore, it transmits to a flash ROM 4, and rewriting which changes into a new program the conventional program memorized here is performed (S406). After this, it is expressed as the screen of the drop which directions of removal of IC card 1 do not illustrate (S407), that removal is judged, and it is ended (S408, S409). That is, rewriting changed into the new program for performing modification and version up of a program is completed.

[0020] Moreover, control for which CPU3 interrupts copy actuation in under copy actuation which is Yes of S403 is performed (S410), and when it is expressed as the screen of the drop which directions of removal of IC card 1 do not illustrate after this (S411), removal of \*\*\*\* is judged and IC card 1 is demounted, copy actuation is resumed and it is ended (S412-S414).

[0021] Thus, with this 1st operation gestalt, in case a connector 2 is equipped with IC card 1 and a program is rewritten, energization is stopped to a fixing heater 7. Therefore, since the energization to a fixing heater 7 is stopped also when malfunction, for example, the pin of IC card 1 and contact of a connector 2, changes into a non-contact condition with static electricity at the time of wearing by dust or the operator and CPU3 overruns recklessly during rewriting actuation of the program in CPU3, as the Prior art explained, it stops overheating and the outbreak of a fire in the case of being the worst etc. can prevent certainly.

[0022] Next, the 2nd operation gestalt is explained. Drawing 4 is the circuit diagram of the 2nd operation gestalt. With this 2nd operation gestalt, actuation of motors, such as a photo conductor driving

gear, was suspended during rewriting actuation of a program, supply of the direct current voltage supplied to the relay switch 6 in drawing 1 next was suspended, and the energization to a fixing heater 7 is stopped.

[0023] In drawing 4, this 2nd operation gestalt has IC card 1 of the same configuration as the 1st operation gestalt, a connector 2, resistance R and CPU3, a switch SW1, a flash ROM 4, and AC power supply 8, and the DC-power-supply section 10 which outputs DC output voltage for a drive (for example, 38V, 24V) and DC electrical potential difference for control (for example, 5V) supplied to the relay switch 6 illustrated to drawing 1 is further formed from AC power supply 8.

[0024] This DC-power-supply section 10 has composition which changes and outputs this direct current voltage to DC output voltage for a drive with DC to DC converter 13 while it changes the alternating current from AC power supply 8 into a low battery in the rectification smoothing circuit 12 and outputs that direct current voltage rectified and graduated. Moreover, the DC-power-supply section 10 has composition which changes and outputs the direct current voltage from the rectification smoothing circuit 12 to DC electrical potential difference for control with DC to DC converter 14.

[0025] Furthermore, the DC-power-supply section 10 energizes the direct current voltage from the rectification smoothing circuit 12 to DC to DC converter 13, or has the switch SW2 stopping (turning on and off), and the output signal S3 from CPU3 is inputted through a latch circuit 17, and it turns this switch SW2 on and off. During rewriting actuation of the program at the time of equipping a connector 2 with IC card 1, an output signal S3 is latched by the latch circuit 17, and OFF with a switch SW2 is held.

[0026] In the OFF state of this switch SW2, the output of DC output voltage for a drive from DC to DC converter 13 is suspended. Moreover, a latch circuit 17 incorporates DC electrical potential difference for control from DC to DC converter 14, and falls or stops the output of this DC electrical potential difference for control during rewriting actuation of a program. In addition, it may replace with a setup to which a latch circuit 17 incorporates this DC electrical potential difference for control, and reduces it (or 0V), and you may constitute so that a latch circuit 17 may stop actuation of DC to DC converter 14.

[0027] Actuation of this 2nd operation gestalt is explained below. IC card 1 in the 2nd operation gestalt explains first the actuation at the time of usual [ with which a connector 2 is not equipped ], in drawing 4, CPU3 has memorized to the flash ROM 4 like the 1st operation gestalt by the normal operation in this 2nd operation gestalt -- transport-agent activation is carried out and control action is started. Moreover, CPU3 incorporates the high-level input signal of a switch SW1 depended off, and recognizes un-equipping with IC card 1.

[0028] In the DC-power-supply section 10, the alternating current from AC power supply 8 is changed into a low battery in the rectification smoothing circuit 12, and the direct current voltage rectified and graduated is supplied to DC to DC converter 14 and a switch SW2. It outputs to the relay switch 6 which DC to DC converter 14 changed direct current voltage into DC electrical potential difference for control, and was illustrated to drawing 1. Moreover, the output signal S3 from CPU3 is inputted into a switch SW2 through a latch circuit 17, and an ON state is held. By the ON state of this switch SW2, the direct current voltage from the rectification smoothing circuit 12 is supplied to DC to DC converter 13, it changes into DC output voltage for a drive here, and motors, such as a photo conductor driving gear, are supplied.

[0029] Next, rewriting actuation of the program by which the connector 2 was equipped with IC card 1 in the 2nd operation gestalt is explained. Drawing 5 is a flow chart which shows processing of rewriting actuation of the program of the 2nd operation gestalt. In drawing 4 and 5, in rewriting actuation of the program of this 2nd operation gestalt, the transport agent memorized to the flash ROM 4 is read and performed like the 1st operation gestalt, and that control action is started. Moreover, CPU3 incorporates the input signal of a low level by ON with a switch SW1, and wearing of IC card 1 is recognized. further -- CPU3 -- a current copy -- it judges whether it is working (S501-S503).

[0030] a copy -- when not working (S503, No), CPU3 holds a switch SW2 for an output signal S3 to an ON state through a latch circuit 17, supplies the direct current voltage from the rectification smoothing circuit 12 to DC to DC converter 13, and changes and outputs it to DC output voltage for a drive here. A



switch SW2 is similarly held to an ON state through a latch circuit 17, DC to DC converter 14 changes and outputs the direct current voltage from the rectification smoothing circuit 12 to DC electrical potential difference for control, and it enables it to continue rewriting actuation of a program so that this DC electrical potential difference for control may explain to a detail henceforth (S504).

[0031] Next, CPU3 starts modification (download) to the new program stored in IC card 1, and control action by this new program is performed (S505). Rewriting which furthermore transmits to a flash ROM 4 and changes the memorized conventional program into a new program is performed (S506). Next, CPU3 sends out an output signal S3 to a latch circuit 17, holds a switch SW2 to an OFF state, and suspends supply of the direct current voltage from the rectification smoothing circuit 12 to DC to DC converter 13 (S507).

[0032] During rewriting actuation of the program by which the connector 2 was equipped with IC card 1 here, the output of DC output voltage for a drive is suspended, and the judgment is made (S508). In addition, the output of DC electrical potential difference for control from DC to DC converter 14 does not stop. That is, it is for performing the display action which directs removal of IC card 1 after this. Next, it is expressed as the screen of the drop which directions of removal of IC card 1 do not illustrate (S509), and the removal is performed (S510). An output signal S3 is sent out to CPU3 after this to a latch circuit 17, and the output of DC electrical potential difference for control from DC to DC converter 14 is suspended (S511).

[0033] When this DC electrical potential difference for control is supplied to the relay switch 6 in drawing 1, supply of the alternating current from AC power supply 8 to a fixing heater 7 will be suspended in actuation of the 1st operation gestalt. Next, removal of IC card 1 is judged to be an output halt of DC electrical potential difference for control, and it ends (S512, S513). Moreover, in under copy actuation which is Yes of S503, control which interrupts copy actuation like the 1st operation gestalt is performed, and it is expressed as the screen of the drop which removal of IC card 1 does not illustrate. Next, when the removal is judged and IC card 1 is demounted, copy actuation is resumed and it is ended (S514-S518).

[0034] Thus, with the gestalt of this 2nd operation, in case rewriting which equips a connector 2 with IC card 1, and changes a program is performed, the energization to motors, such as a photo conductor driving gear, is stopped. Consequently, also when CPU3 falls out of control, motors, such as a photo conductor driving gear, stop malfunctioning, and that safety improves. Furthermore, the energization to a fixing heater 7 is also stopped, it stops overheating, and the outbreak of a fire in the case of being the worst etc. can prevent now certainly.

[0035]

[Effect of the Invention] According to the reproducing unit of invention according to claim 1, when the condition out of control in a fixing heater control means arises during rewriting actuation of the program equipped with external storage, energization to a fixing heater is not performed, but the overheating can prevent now certainly, and it is effective in the safety improving so that clearly from the above explanation.

[0036] Since the energization to motors, such as a drive, is stopped in case it changes into the new program equipped with external storage according to the reproducing unit of invention according to claim 2, incorrect rotation actuation of the motor of the drive by the condition out of control in a control means stops occurring, and it is effective in the safety improving.

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[Translation done.]

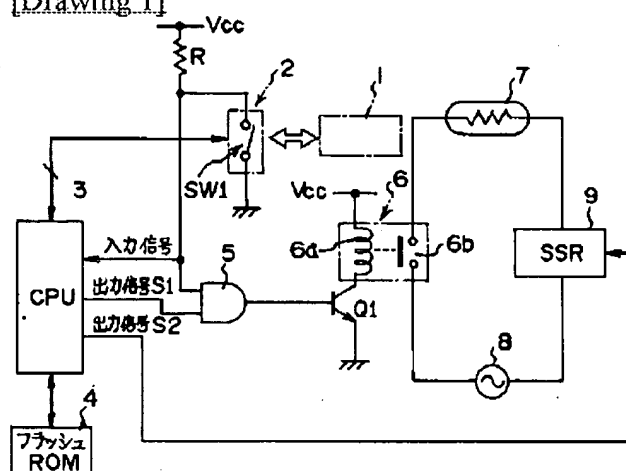
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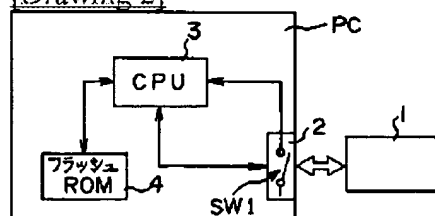
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## DRAWINGS

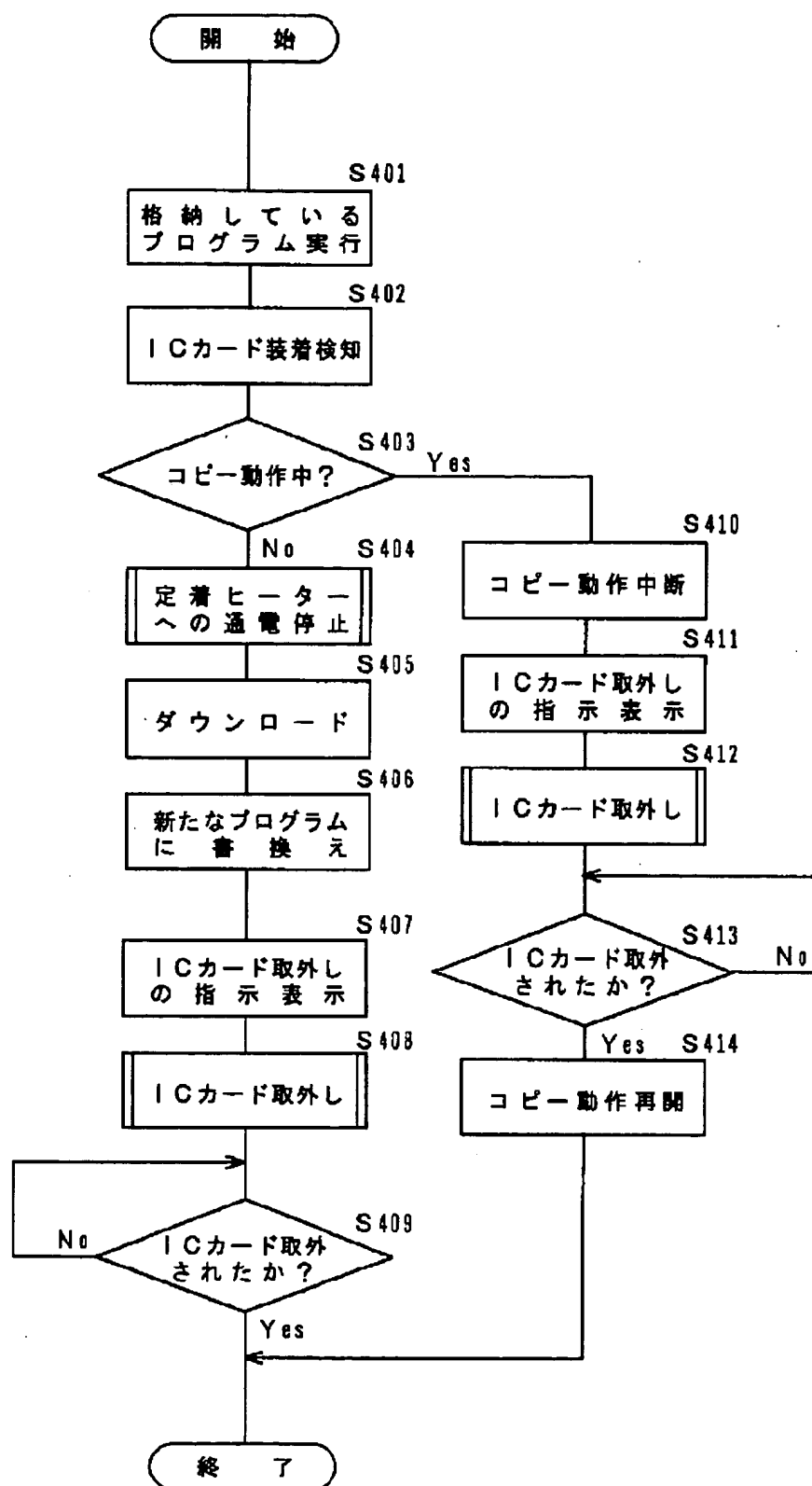
[Drawing 1]



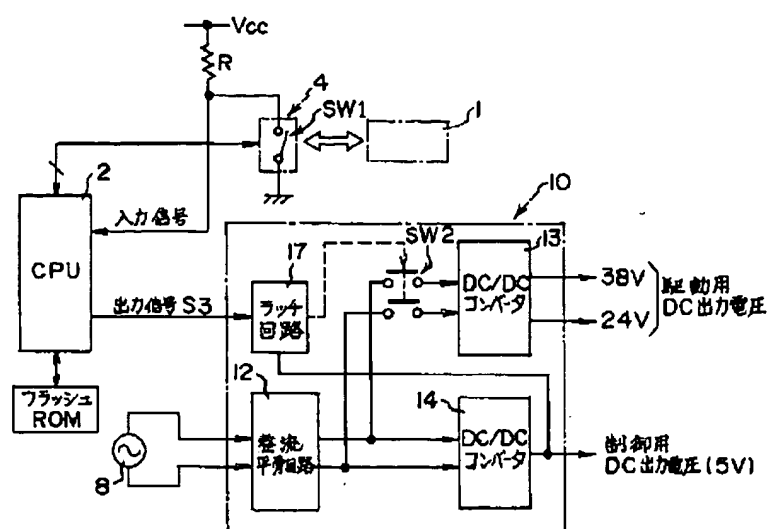
[Drawing 2]



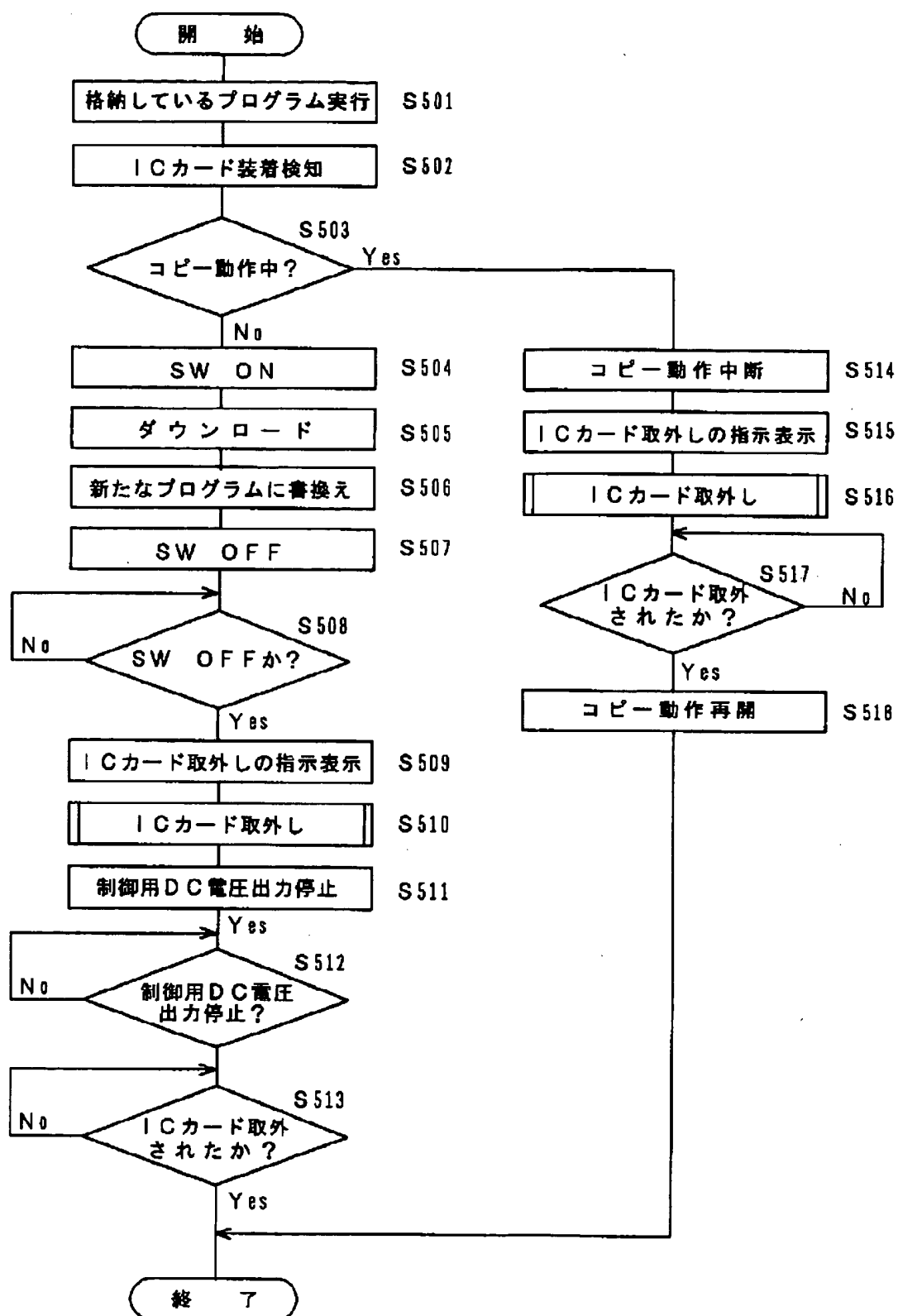
[Drawing 3]



[Drawing 4]



[Drawing 5]



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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the circuit diagram of the 1st operation gestalt of this invention.

[Drawing 2] It is a mimetic diagram for explaining attachment and detachment of the IC card in drawing 1.

[Drawing 3] It is the flow chart which shows processing of rewriting actuation of the program in the 1st operation gestalt.

[Drawing 4] It is the circuit diagram of the 2nd operation gestalt of this invention.

[Drawing 5] It is the flow chart which shows processing of rewriting actuation of the program in the 2nd operation gestalt.

[Description of Notations]

1 IC Card

2 Connector

3 CPU

4 Flash ROM

5 AND Gate

6 Relay Switch

7 Fixing Heater

8 AC Power Supply

13 14 DC to DC converter

17 Latch Circuit

Q1 Transistor

SW1, SW2 Switch

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[Translation done.]